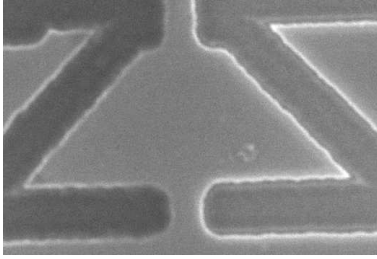


Appendix A

Samples inventory

A.1 InGaAs samples

The quantum dots area A is calculated taking into account the depletion width at the edges of the devices (between 25 and 45 nm in InGaAs samples). Mobilities μ are evaluated from longitudinal resistance measurements on macroscopic pieces of wafer. Surface electron densities are calculated from Hall measurements on macroscopic samples, and (when available) from Shubnikov-de Haas oscillations at high magnetic field.



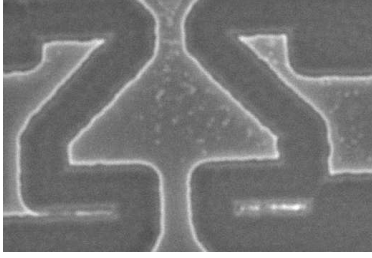
500 nm

Figure A.1: **Sample A₁**

A : $0.28 \mu\text{m}^2$

μ (low T): $7 \text{ m}^2/\text{Vs}$

n_s (illuminated) : $2.4 \times 10^{16} \text{ m}^{-2}$



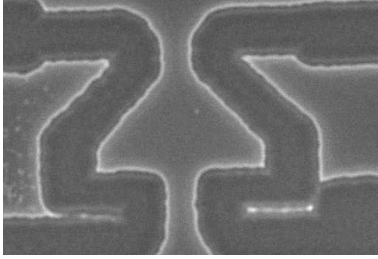
500 nm

Figure A.2: **Sample A₂**

$$A: 0.13 \mu\text{m}^2$$

$$\mu \text{ (low } T\text{)}: 7 \text{ m}^2/\text{Vs}$$

$$n_s \text{ (illuminated)} : 2.4 \times 10^{16} \text{m}^{-2}$$



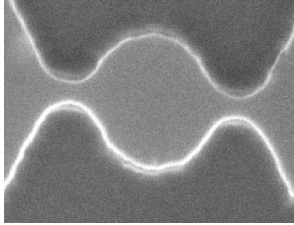
500 nm

Figure A.3: **Sample A₃**

$$A: 0.09 \mu\text{m}^2$$

$$\mu \text{ (low } T\text{)}: 7 \text{ m}^2/\text{Vs}$$

$$n_s \text{ (illuminated)} : 2.4 \times 10^{16} \text{m}^{-2}$$



500 nm

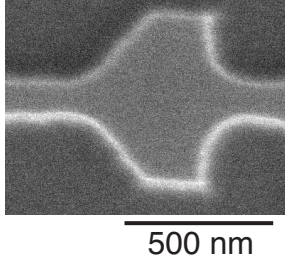
Figure A.4: **Sample B₁**

$$A: 0.11 \mu\text{m}^2$$

$$\mu \text{ (low } T\text{)}: 3 \text{ m}^2/\text{Vs}$$

$$n_s : 1.0 \times 10^{16} \text{m}^{-2}$$

note : gate on top of the whole structure.

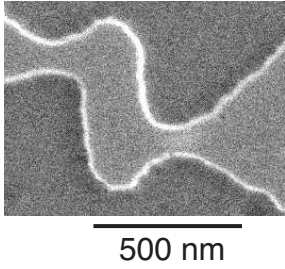
Figure A.5: **Sample B₂**

A : $0.13 \mu\text{m}^2$

μ (low T): $3 \text{ m}^2/\text{Vs}$

n_s : $1.0 \times 10^{16} \text{ m}^{-2}$

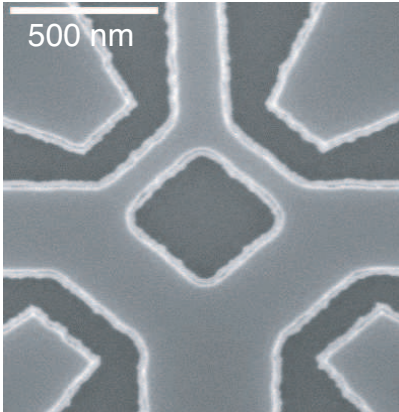
note : gate on top of the whole structure.

Figure A.6: **Sample B₃**

A : $0.09 \mu\text{m}^2$

μ (low T): $3 \text{ m}^2/\text{Vs}$

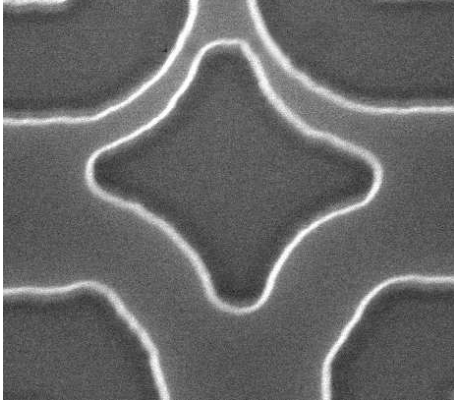
n_s (illuminated) : $2.8 \times 10^{16} \text{ m}^{-2}$

Figure A.7: **Sample C₁**

μ (low T): $4 \text{ m}^2/\text{Vs}$

n_s : $1.7 \times 10^{16} \text{ m}^{-2}$

note : changes of $\sim 25\%$ of n_s when the sample was illuminated.

Figure A.8: **Sample A₄**

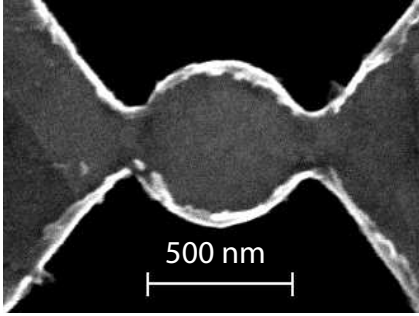
μ (low T): $7 \text{ m}^2/\text{Vs}$

n_s : $1.7 \times 10^{16} \text{ m}^{-2}$

note : changes of $\sim 25\%$ of n_s when the sample was illuminated.

500 nm

A.2 Bi samples

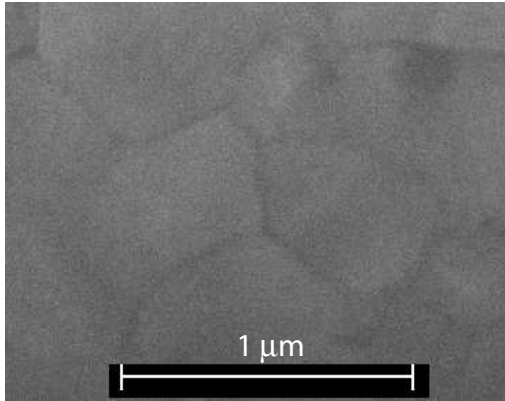
Figure A.9: **Sample Bi₁**

A : $0.09 \text{ } \mu\text{m}^2$

μ (low T): $0.9 \text{ m}^2/\text{Vs}$ (?)

n_s : $5.5 \times 10^{16} \text{ m}^{-2}$

500 nm

Figure A.10: **Samples Bi₂₋₃**

μ (low T): $0.9 \text{ m}^2/\text{Vs}$
 n_s : $5.5 \times 10^{16} \text{ m}^{-2}$

